ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

BB-20 1997

# Phosphorus
## Just a Little Is Too Much for Our Lakes

Phosphorus (P) is an element you can find on the periodic table. Remember back to your high school chemistry days when you located oxygen (O) and hydrogen (H) on that same chart. Almost all of the phosphorus in nature is in the form of phosphate (PO4-3), an ion consisting of four oxygen atoms bound to one P atom.

Sources of phosphorus include the weathering of geologic phosphate material, atmospheric deposition, groundwater, agricultural runoff, urban runoff, domestic and industrial sewage, septic systems and waterfowl waste.

The importance of phosphorus to New Hampshire lakes stems from this element being "the limiting nutrient". Phosphorus is the substance that limits biological growth due to its short supply with respect to other substances necessary for the growth of an organism. It only takes a minute quantity of phosphorus to increase the growth rate of those primitive plants, known as algae. This production of organic matter from light energy and inorganic materials is primary production.

However, not all phosphate is available to algae, and different forms of this element are available at different rates. Orthophosphate is immediately available for uptake by algae while particulate phosphorus can become available through time by decomposition.

In general, an increase of phosphorus to a lake initiates a series of events that can lead to deteriorating lake quality. The increase of phosphorus and an adequate supply of sunlight to an aquatic system results in increased productivity. A decrease in water clarity corresponds to an increase of algal cells. As these cells slowly settle into the deeper, darker waters of the lake the cells die and collect on the bottom. Bacterial decomposition of large quantities of these cells rob the bottom waters of oxygen. Anoxic (devoid of oxygen) water and sediments promote conditions that encourage the recycling of phosphorus back into the water column.

The importance of managing phosphorus in the watershed is the key to protecting the lake itself. Watershed activities that increase the input of phosphorus to the lake must be controlled by using Best Management Practices that minimize the movement of phosphorus to the lake. Erosion is one of the most common ways that phosphorus enters a lake. Watershed activities that promote phosphorus loading by increasing the soil's capacity to erode include: irresponsible tree cutting; removing stumps, bushes and grasses; and increasing the impervious surface area (driveways, parking lots, etc.). Sometimes just a little common sense can stop pollutants from entering a waterbody.

**For more information on what you can do to help protect these waterbodies, consult DES's booklet *Answers to Common Lake Questions*** or call the N.H. Department of Environmental Services at 271-3503 for more information.